City of Burlington

Utilities Department

Sewage Collection and Wastewater Treatment Report

For the Fiscal Year July 2004 – June 2005

This is the sixth annual Sewage Collection and Wastewater Treatment Report for the City of Burlington, NC.

On July 21, 1999, North Carolina Governor James Hunt signed a law that placed new reporting requirements on the owners or operators of wastewater treatment and wastewater collection facilities in North Carolina. Part of this new legislation is a requirement to provide the users or customers of the system with an annual report of the past year's performance including a summary of wastewater spills.

The purpose of these reports is to provide an understandable and informative description of the wastewater treatment facilities and collection system, describe the regulations with which these facilities must comply, and promote a general awareness of these facilities and their role in protecting the environment.

INTRODUCTION

The City of Burlington operates two wastewater treatment facilities and a sewage collection system that collects and transports the sewage to each of these two locations. The names and permit information for these facilities are listed below as well as those professionals designated by the State of North Carolina as Operators in Responsible Charge (ORC):

East Burlington Wastewater Treatment Plant
Quarry Road, Haw River, NC
Phone (336) 578-0515
NPDES Permit # - NC0023868
Operator in Responsible Charge (ORC) – Clarence Sell

South Burlington Wastewater Treatment Plant
Boywood Road, Graham, NC
Phone (336) 227-6261
NPDES Permit # - NC0023876
Operator in Responsible Charge (ORC) – Jesse Sykes

Sewage Collection System
1103 S. Mebane Street, Burlington, NC
Phone (336) 222-5140
Collection System Permit # - WQCS00008
Operator in Responsible Charge (ORC) – Tommy Layne

This report is being provided to meet the requirements of North Carolina law (HB 1160). Copies will be available at the East Burlington Wastewater Treatment Plant, the South Burlington Wastewater Treatment Plant, the Municipal office building (City Hall) at 425 Lexington Avenue, the May Memorial Public Library, the Public Works building at 234 E Summit Avenue, the Ed Thomas WTP at 149 E. Ruffin St. and published on the City of Burlington website – www.ci.burlington.nc.us/.

Customers will be notified of the availability of this report by ads in the Burlington Times News.

THE IMPORTANCE OF WASTEWATER TREATMENT

Every living organism interacts with its environment. Pollution is the addition of impurities to the environment. For centuries humans have put their sewage into streams, lakes, or oceans. This pollution did not cause significant environmental impact because nature could eliminate it faster than it would accumulate. However, the human population has increased and natural decomposition can no longer keep up with the wastes being generated. The purpose of a wastewater treatment facility is to facilitate the natural decomposition of sewage so that the water released back to the environment – typically into a stream or river – will have minimal or no negative impact on the environment. The City of Burlington owns and operates two wastewater treatment facilities. The East Burlington

wastewater treatment facility discharges treated water into the Haw River near the NC highway 70 bypass near the town of Haw River. The South Burlington facility discharges into the Big Alamance Creek near Boywood Road in Swepsonville. This treatment process ensures that water is constantly being recycled.

NPDES PERMIT

The treatment and release of sewage can be a delicate and complex balancing act. State agencies assure that stringent standards are met before the treated water can be released into a receiving stream. These standards are summarized in a National Pollutant Discharge Elimination System (NPDES) permit. Each facility that releases treated wastewater into any surface water – a stream for example – must apply for and possess one of these permits. These permits regulate the type and amounts of pollutants that a facility can discharge. The discharge limits in these permits are based on a stream's ability to withstand the addition of pollutants without having a noticeable impact on the stream's water quality. These permits are different from one wastewater plant to another and even from one season to another. To protect the stream, a facility's NPDES permit assumes that the stream is ALWAYS flowing at its lowest flow. This is called the "7 Q 10" flow. It is meant to represent the lowest flow that the stream will experience in 7 consecutive days once every 10 years. Even though a stream or river might be experiencing a high flow due to heavy rain, a wastewater plant must continue to discharge as if the stream were experiencing an unusually low flow. These strict standards provide wastewater plants with a margin of safety when it comes to protecting the environment.

DOWN THE DRAIN – WHERE DOES IT ALL GO?

Burlington is home to a large number of mills and manufacturing plants. These plants use tremendous amounts of water. After this water has been used it is discharged into the sewer system. Wastewater treatment facilities designed to treat domestic waste sometimes have difficulty treating industrial waste. The various pollutants from many different sources often makes the NPDES permit regulations more difficult to meet. It is a misconception that when something is flushed "down the drain", it is gone, never to be seen - or worried about - again. People who use the sewer system should be aware of the other end of the drain. When something goes in their end, it will come out - and must be removed - at the other. When wastewater arrives at the treatment facility, it must go through the entire treatment process. Anything and everything that arrives at the plant must be treated – and the treatment facility must still meet the NPDES permit limits. This makes a wastewater plant vulnerable to chemicals or pollutants that might upset the treatment process. In order to help prevent unwanted pollutants from entering the sewage treatment process, the City of Burlington laboratory personnel monitor the industrial discharges. Industries that discharge into the Burlington sewer system are inspected and must comply with discharge permits of their own to help protect the sewer collection system, the treatment facility, employees of the City's Utility Department, and the environment. In many instances, industries are required to provide initial treatment of their wastewater before discharging it into the city sewer system.

COLLECTION SYSTEM OVERVIEW

Burlington's wastewater collection system consists of approximately 18,000 connections serving homes, businesses and industry, 350 miles of sewer line, 5,300 manholes, 3 sewer lift stations and approximately 6,500 feet of pressurized force main. Every day an estimated 13 million gallons of sewage is transported from our homes and businesses through this collection system to the East Burlington and South Burlington wastewater treatment facilities. The collection system has both gravity lines and force mains. Sewage discharged in neighborhoods flows by gravity into the collection system. As more and more sewage is collected from other service areas, the size of the sewer lines increases to handle the larger volumes of wastewater. Eventually, these gravity lines reach low points in the collection system where the sewage must be pumped. The City of Burlington currently utilizes three lift stations with a maximum capacity of about 4.4 million gallons per day and an average flow of about 331,600 gallons per day. These lift stations pump sewage up and over ridges where the sewage can flow by gravity the remainder of the distance to the treatment facilities. The City of Burlington has an ongoing program to clean and monitor the collection system. High-pressure washing, chemical treatment for root growth, a Fats, Oils and Grease (FOG) program, and closed circuit television monitoring program are a few of the tools we use to maintain your collection system and prevent sewer overflows. Last year the collection system transported over 4,600,000,000 gallons (see Table 1) of wastewater (4.600 Billion Gallons*[1]). During that same period, the City experienced 9 reportable overflows resulting in a loss of an estimated 21,750 gallons of raw sewage. To give some perspective on these numbers, consider that for every 825 gallons of wastewater transported through the collection system the City of Burlington lost less than 1 tablespoon to overflows. The single largest overflow of 8,000 gallons occurred on March 28, 2005. This overflow was the result of heavy rains that surcharged the sewer lines in the area. This

[1] * to help comprehend how large One Billion is: 1 billion seconds is 32 years, 1 billion inches is 15,800 miles. 1 billion feet will take you around the world 7 ½ times, 1 billion tablespoons of water is 650 tanker trucks full.

single incident accounted for over one third of the entire amount that was released during the year. A summary of all the spills can be found in Table 3 at the end of this report. This report includes a list of all reportable instances between July 1, 2004 and June 30, 2005 in which untreated sewage was released. A reportable instance is one in which untreated sewage has entered a stream or river or entered a ditch or waterway that led to a stream or river, OR any spill that was greater than 1,000 gallons - regardless of whether or not it reached a stream. The City of Burlington experienced to total of nine reportable overflows this past year (July 1, 2003 – June 30, 2004). Seven of these overflows were the result of blockages caused by the accumulation of grease and debris or roots growing in the sewer lines. The remaining two incidents were the result of equipment failure that occurred during a temporary bypass and one overflow that was the result of excessive flow caused by heavy rains. The bypass failure occurred while attendants were present and was detected and repaired immediately. The excessive flows caused by heavy rains have been an ongoing issue for the City. The City is engaged in a program to reduce the amount of overflows that result from the infiltration of rainwater. The City is also paying closer attention to those areas where falling debris could damage above-ground sewer lines and result in a sewage release.

SUMMARY

Last year alone, the City of Burlington spent approximately $675,000 to construct, maintain and repair sewer service lines and over $3,600,000 to operate and maintain the wastewater treatment facilities. The Utilities Department is proud of the performance of our collection system and treatment plants for the past year. Despite the dedicated efforts of our wastewater treatment plant staff, it is often difficult to avoid violations of the NPDES permit. Table 2 at the end of this report contains a list of the NPDES permit violations for this past reporting year. Violations or spills are often a result of conditions that are beyond the reasonable control of the operator. Weather and vandalism are two examples that may cause a violation. Our ultimate goal is to have no spills or permit violations. We want to provide the best possible service to our customers and continue to be responsible stewards of our environment. We want the public to realize the importance of protecting our precious water resources. We believe providing information will be the most effective tool to ensure the support needed to meet our goals to protect our environment – now and well into the future.

For more information, please contact the Department of Utilities at (336) 222-5133.

Table 1

City of Burlington
Summary of Wastewater Flows*
July 1, 2004 - June 30, 2005
*all flows are expressed as million gallons (MG)

Month / Year	South Burlington	East Burlington	Combined Total
Jul-04	195.3	145.7	341.0
Aug-04	217.0	164.3	381.3
Sep-04	252.0	174.0	426.0
Oct-04	201.5	148.8	350.3
Nov-04	222.0	162.0	384.0
Dec-04	229.4	164.3	393.7
Jan-05	226.3	167.4	393.7
Feb-05	210.0	156.8	366.8
Mar-05	266.7	192.2	458.9
Apr-05	240.0	171.0	411.0
May-05	204.6	145.7	350.3
Jun-05	192.1	151.2	343.3
Total (MG)	2,656.9	1,943.4	4,600.3
Average Month (MG)	221.41	161.95	383.36
Average Day (MG)	7.279	5.324	12.604

Note: This table is based on a 365 day fiscal year beginning July 1, 2004 and ending June 30, 2005

Table 2

East Burlington WWTP - Summary of Violations - July 1, 2004 - June 30, 2005			
Month / Year	Violation	Environmental Impact	Number of Violations
May 2005	Failure to sample for Cyanide	None Observed	1
South Burlington WWTP - Summary of Violations - July 1, 2004 - June 30, 2005			
Month / Year	Violation	Environmental Impact	Number of Violations
May 2005	Failure to sample for Cyanide	None Observed	1

Table 3

Date	Volume	Location	Cause	Impact	Corrective measures
10/01/04	300	Center Ave. OF M/H behind Tucker St. Apts.	Grease	No adverse environmental impact observed	Removed the source of the blockage. This line has been put on a 6-month cleaning schedule.
10/05/04	350	M/H @ NC87 S. Mallard Creek	Grease	No adverse environmental impact observed	Removed the source of the blockage and flow was restored.
11/25/04	1,500	Durham St. OF Between Durham St. and St. Regis Dr.	Grease & Debris	No adverse environmental impact observed	Removed the source of the blockage. Bi-annual inspections of this location are being performed.
1/14/05	400	Manhole @ 2050 Nottingham Ln.	Grease	No adverse environmental impact observed	Removed the source of the blockage. Bi-annual inspections of this location are being performed.
1/25/05	100	Manhole at end of Franklin St.	Equipment Failure	No adverse environmental impact observed	Overflow was stopped and standing water was vacuumed into a holding tank.
3/05/05	2,650	Country Club Forest OF 709 Westbrook Ave.	Grease & Roots	No adverse environmental impact observed	Annual roots treatments are being performed on sections of sewer line in this area.
3/28/05	8,000	N. Burlington OF Graham-Hopedale Rd.	Heavy Rain	No adverse environmental impact observed	Sewer line was relined (Insituform) and the manholes were rehabilitated.
3/29/05	6,200	Richmond Ave. OF 1001 Richmond Ave.	Grease & Roots	No adverse environmental impact observed	Removed the source of the blockage. Will perform a chemical treatment on this line to inhibit root growth.
6/21/05	2,250	Belmont St. OF Peace Ln.	Roots	No adverse environmental impact observed	Removed the source of the blockage. This line will be visually inspected by CCTV for problems
	Total Estimated Overflow		21,750 gallons		

2004 –05 Annual Report
of the
Collection System and Wastewater Treatment Facilities
for the
City of Burlington, NC
August 1, 2005

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I certify, under penalty of law, that this report is complete and accurate to the best of my knowledge. I further certify that this report has been made available to the users or customers of the named system and that those users have been notified of its availability.

_____ _____

Stephen R. Shoaf
Director of Utilities
City of Burlington

Date

City of Burlington
Utility Department
Advertisement

Notice of Wastewater Treatment and Collection System Report Availability

The City of Burlington Utilities Department has completed the annual report of Wastewater Treatment and collection System performance for the Fiscal Year 2004-2005. Anyone interested in obtaining a copy of this report may pick one up at any of the following locations: The Municipal Building (City Hall) at 425 Lexington Avenue. The May Memorial Public Library, The Public Works Building at 234 E. Summit Avenue, or the Utility Office at 149 E. Ruffin St. This report has also been published on the City of Burlington's website at: www.ci.burlington.nc.us

If you have any questions concerning the availability of this report, please contact personnel in the Utility Department by calling (336) 222-5132

Document Approval

Date: August 1, 2005

Please read and approve the attached Document

To Steve Shoaf
Fr: Eric Davis
Document 2004-05 Sewage Collection & Wastewater Treatment Report

☐ Approved

☐ Make changes as indicated on document.

☐ Consider changes as indicated on document.

Signature _____ Date _____

Document Pertains to: 2004-05 Collection System & Wastewater Treatment Report

Document Title: